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ENVIRONMENTAL SCANNING, STRATEGIC BEHAVIOR AND PERFORMANCE IN SMALL COMPANIES

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ABSTRACT

This paper's theme lies in the interaction between the organizational strategy and the environment of small companies and aims to analyze the relation between the scanning of environmental information, strategic behavior and performance. As a research method, the survey-type quantitative approach was used. The application of questionnaires and data analysis were also used alongside this method, using correlations and analysis of variance to verify the differences among companies classified as prospector, analyzer and defender, in their scanning efforts and use of information sources. The main results show that prospectors scan data from the competition as well as technological aspects and access written sources of information and internal sources of information more frequently than those that adopt another type of strategic behavior. Overall, the scanning of information sources was more associated with the performance than with the strategy measured by the strategic behavior typology.

Keywords: Environmental Scanning; Strategic Behavior; Performance; Small Companies

1. INTRODUCTION

Organizations operate in an information economy in which their success depends more on knowledge than on the resources they own. In this context, competitiveness is based on the ability to acquire, treat and use information efficiently in order to make decisions (Mcgee; Prusak, 1994).

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Competitiveness of an organization depends on their business strategy. However, in order to develop an efficient strategy, it is necessary to understand what makes the organization more competitive. Therefore, the organization needs to know the environment in which it operates before it develops its competitive strategy.

Henderson (1998) states that the riskier the environment, the higher the number of competitors and the fiercer the competition will be. The environments, to the extent that they cause problems and create opportunities in the organizations, increase the level of uncertainty and lead to a process of acquiring information, as the managers need to detect and interpret challenging areas, and identify opportunities. For Hambrick (1983) and Hagen and Amim (1995), a way to avoid being taken by surprise by environmental changes is the environmental scanning, which consists in an essential process of organizational management, enabling managers to spot environmental changes and the strategies adopted by their competitors.

McGee and Prusak (1994) argue that the process of defining a strategy is the process in which information is highly involved as an efficient definition process requires accurate and diverse information in a timely fashion and in high volumes. The need for organizational adjustment to the environment by means of a strategy requires that companies understand what happens around them: their consumers' needs, competitors' achievements, suppliers' conditions and governmental regulations, among the potentially relevant factors (Davenport, 1998). As such, information collected from the environment is a resource used for the success of the organization. According to McGee and Sawyerr (2003), effective environmental scanning is an essential practice in business management, where the collection of accurate information is necessary. This scanning is important so that organizations operate as open systems, searching for resources and legitimacy in their environment. Through the scanning process, it is possible for managers to define strategies adjusted to the market's conditions.

Environmental scanning has been regarded as the first stage in the process of associating the organization´s strategy with the environment (Hambrick, 1983; Daft; Sormunen; Parks, 1988; Beal, 2000). Understanding that environmental scanning enables the company to learn about opportunities of which it can take advantage, and about the events or problems that may threaten its performance, allows defining strategies aligned with environmental conditions. Analoui and Karami (2002) state that the importance of scanning information in such an alignment in small and medium-sized companies has gained more importance and has been more influential in achieving maximum performance.

Although research connecting strategies and organizational characteristics (Aragón-Sanches, A.; Sánches-Marín, G., 2005) and relating environmental scanning and organizational characteristics (Haase, H.; Franco, M., 2011) has been done, the connection between scanning and strategy in small companies is worthy of more attention as managers' scanning activities have been prioritized over the last decades. However, not much has been researched about the relationship between the environmental scanning and strategy (Hagen; Haile; Maghrabi, 2003).

Notably, studies performed in small companies tend to be descriptive and focused on the use of information sources. Whereas the ones performed in big companies may not be generalized to the entrepreneurs - as their answers and cognitions prove to be different from each other (Stewart JR.; May; Kalia, 2008). Due

to the close relationship between information and strategy, companies that use different strategies and behaviors must adopt different scanning practices.

Thus, this study's theme regards the relationship between environmental scanning and strategy adopted by small companies, in an attempt to contribute to filling this gap in the studies performed in the pertinent area. In order to achieve this, the purpose of analyzing the scanning practices of small companies that adopt different strategic behaviors was set. More specifically, it is verified whether small companies with different strategic behaviors vary the frequency in which they scan external environmental aspects as well as varying the frequency in which they use information sources, relating these variables to performance. As a method of control, it was investigated whether the companies vary their scanning practices and strategic behavior due to their size and age.

2. ENVIRONMENTAL SCANNING

One of the authors to address this theme was Aguillar (1967), who defines scanning as a manner through which managers acquire relevant information about what happens outside the company so that future courses of action are taken.

According to McGee and Sawyerr (2003), environmental scanning is a present and essential practice in business management, where the collection of accurate information is necessary. This scanning is important so that organizations operate as open systems, searching for resources and legitimacy in their environment. In addition, scanning makes it easy to obtain signals or information and, whenever effectively taken into account, it describes the conditions reflected in the environment, shows advancements, opportunities and the conditions related to existence or nonexistence of problems (Yasai-Ardekani; Nystrom, 1996). Effective scanning of the environment has been necessary for the competitive success of strategies - environmental scanning being the first stage of the process, associating strategy with the environment (Beal, 2000). May, Stewart and Sweo (2000) and Yunggar (2005) also make it clear that environmental scanning provides the organization with important information, thus, keeping it from becoming stagnant due to the lack of information given to their executives about environmental changes.

Based on this information, proper adjustments are made between the internal structure and the environment. Therefore, organizations need to keep attuned to what is happening in the environment so that managers may respond to the market changes.

Two important aspects in the scanning process are related to the frequency in which information about the external environment is acquired and how it is acquired. Frequency (Daft; Sormunen; Parks, 1988; Beal, 2000) refers to the number of times a manager scans the environment, while how the manager acquires information refers to the type of source. Companies may acquire a large or small amount of data about the environment. The frequency in which data is acquired may vary according to the nature of the external aspects under observation, as the environment may be regarded as having a variety of components.

Daft, Sormunen and Parks (1988) subdivide these components into clients, competitors, technological aspects, economic aspects, regulatory aspects, and social and cultural aspects, and the results of their studies showed that the scanning frequency

varied according to these areas - a fact substantiated by previous studies such as the ones by Lang, Calatone and Gudmundson (1997), Raymond, Julien and Ramangalaby (2001), Analoui and Karami (2002) and Sund (2013).

Environmental information can be acquired by methods that vary from personal to impersonal sources and from external to internal sources related to the organization (Aguilar, 1967). Personal sources refer to conversations face-to-face or by telephone and they provide multiple suggestions and quick feedback, while impersonal sources refer to the written or documental ones and they enable to condense a large amount of data. Internal sources are found within the organization and enable data directly related to their reality, while external sources are found outside the organization and they lose less data as they do not go through intermediary parties (Daft; Sormunen; Parks, 1988). Due to its distinctive nature, access frequency may vary according to the type of source referred to, as seen in the studies by Daft, Sormunen and Parks (1988), Beal (2000), May, Stewart and Sweo (2000), Stewart Jr., May and Kalia (2008) and Haase and Franco (2011).

3. STRATEGY AND STRATEGIC BEHAVIOR

The word strategy has a number of definitions. Ansoff (1977) regards strategy as a set of decision rules for the company to enjoy profitable growth. Strategies, according to Bourgeois (1980), are the means by which the management of a company sets goals and pursues them through the alignment of the organizational resources with the environment's opportunities and threats. According to Porter (1986), strategy is associated with the positioning of the company in the environment it is part of, with the aim of achieving a favorable position.

In the concept developed by Ohmae (1991), strategy is the way through which the company tries to distinguish itself from the competition in a positive manner, using its relatively strong points to meet customer needs better.

Although, there are variations in descriptions of strategy, the above-stated definitions highlight the role of strategy and its connection between organizations and the environment in which they are part of. The adjustment between an organization and its environment may take place in a number of ways and a significant effort in the scope of strategies lies in classifying general ways of adjustment which may explain organizations' behavior. Thus, among the various authors who have proposed strategic typologies, one can mention Ansoff's Matrix (1977), strategic behaviors by Miles and Snow (1978) and generic strategies by Porter (1986) and by Mintzberg (1988).

The typology by Miles and Snow (1978) has, over the years, drawn the attention of strategic management researchers as it is regarded as a comprehensive classification "and as possible to be applied to small companies, enabling the analysis of organizational behavior regardless of the size of the organization" (Vasconcelos; Cândido, 2005:02). This notion is shared by Rossetto (1998) and Gimenez et. al. (1999), as the classification by Porter (1986) is not very suitable to the study of small companies, for they would fall into the focus strategy category.

What Miles and Snow (1978) propose lies in the different responses the companies give to the three problems that compose the organizational adaptive cycle: (a) the entrepreneurial problem: a definition of the product/market domain; (b) the

engineering problem: the choice of technical systems; and (c) the administrative problem: relating structure to organizational processes. The model proposes that companies develop relatively stable strategic behavior patterns in order to align them with environmental conditions, following defender, prospector, analyzer and reactor strategies.

According to Miles and Snow (1978), in companies that follow a defender strategy, managers are limited to an area in their organization and do not seek opportunities beyond their domain. The strategy lies in keeping their aggressive notoriety in their industry, not paying attention to developments beyond their domain, and in seeking more penetration in their current markets, so their growth takes place with caution.

Defenders are conservative and concentrate their innovation activities on existing products (Pleshko, 2006). Consequently, whenever they are faced with a threat or an opportunity, defenders are going to choose renewal in a certain industry (Zubaedah et al. 2013).Companies that follow a prospector strategy usually respond to their chosen environment contrary to the way companies that follow a defender strategy do. They create change and uncertainty to which their competitors should respond. The strategy of these companies is that of continuous development, with the scanning of environmental circumstances, trends and events, having their first growth stages in new markets and products. It is necessary to believe that companies that follow defender and prospector strategies evolve around a continuous process of strategic adjustment (Miles; Snow, 1978).

Prospectors are aggressive in their search for new opportunities and, therefore, are going to resort to replication and/or recombination. In addition, due to their nature as new market pursuers, they are going to exclude cost considerations associated with these developments (Zubaedah et al. 2013).

Differently, according to Miles and Snow (1978), companies that follow an analyzer strategy operate in two types of product-market domains, a stable one and a dynamic one. In their stable areas, they operate routinely and efficiently with the aid of structures and formal processes. In their dynamic areas, managers pay attention to their competitors and look for new ideas, adopting the most promising ones.

According to analyzers, costs are a determining factor in deciding which direction to take. Whenever faced with a threat or an opportunity, analyzers are going to evaluate which direction they see as the most appropriate to take due to specific conditions, instead of choosing consistently one certain direction, which is what defenders and prospectors do (Zubaedah et al. 2013)..

This strategy is a combination of products and markets, some are stable, some others dynamic, having susceptible limitations of extensive marketing, and eagerly seeking change. In this approach, growth usually takes places by further looking into the market; it may also take place through the development of products and markets (Miles; Snow, 1978).

The fourth approach by Miles and Snow (1978) regards companies that follow a reactor strategy, which make environmental adjustment unstable and inconsistent. According to the authors, reactors are unstable due to the unavailability of consistent mechanisms with which it is possible to make an environmental change. It is possible to state that companies that follow a reactor strategy are organizations in which managers are aware of the change, and of the uncertainty that takes place in their

organizational environments. However, they are not capable of responding efficiently and adjustments in the strategy are hardly ever made to the point when companies are then forced to make them - this usually happens due to high environmental pressure.

To sum up, defenders gain a competitive advantage and become more successful in existing markets with existing products, with a lower level of uncertainty in comparison with other strategic types. The company keeps an internal focus, concentrating on a product-market domain, closely defined by a loss of corresponding adaptation to changes in the environment. A prospector gains a competitive advantage entering its markets with new products, for it is innovative and adopts new technologies quickly.

The company also keeps an external focus on the continuous adaptation to market changes, with a potentially significant loss in operational efficiency. The company that follows an analyzer strategy is a combination of the two first strategy types. Lastly, the reactor does not gain a competitive advantage due to the lack of a clear connection between the structure and the strategy (Gnjidić, 2014).

Chart 1, below, summarizes the characteristics of each type of strategic behavior.

STRATEGIC TYPOLOGY	CHARACTERISTICS
Defender Strategy	A company that follows this type of strategy: - maintains a line of relatively stable products or services. - has a tight control over product and market. - does not tend to search for new opportunities beyond its domain. - managers are highly specialized in their area of work - control and decision making are centralized - strategic actions are geared towards gaining market share based on the offer of better quality products, improved services and/or lower prices.
Prospector Strategy	A company that follows this strategy: - seeks new business opportunities aiming to continuously increase its line of products/services - its managers are highly flexible regarding change and innovation - business activities are decentralized
Analyzer Strategy	A company that follows this strategy: - aims to keep a relatively limited line of products/services stable while it tries to add one or more product(s)/service(s) that were successful in other companies in the same industry - protects its stable market share. - control and decision making are centralized; however, it is possible to identify flexibility in its actions.
Reactor Strategy	A company that follows this strategy: - is not qualified to effectively respond to the implications of changes that take place in the environment. - it does not take risks with new products/services unless it is threatened by competitors. - control and decision-making are highly centralized. - organization structure is rigid.

Chart 1 – Strategic Typologies and their Characteristics
Source: Miles and Snow (1978)

4. METHODOLOGICAL PROCEDURES

The study has a quantitative and descriptive nature. Quantification was employed for both collection and analysis of data in order to enable the detection of significant differences between the types of strategic behavior of the companies in the sample.

Descriptive research is used to measure specific characteristics with the purpose of getting to know and interpreting reality without interfering with it (Malhotra, 2001). The characteristics described in this study are strategic behavior, environmental scanning, performance, size and age.

One hundred and twenty three car dealers composed the study, from the city of Itajaí in the State of Santa Catarina, identified by cross-checking the Secretaria de Receita da Prefeitura Municipal's database (City Council's Department of Revenue) and the car company's database from the junior company of the city's university. The application of questionnaires took place through the researcher's visit to the studied company and a sample of 61 companies was extracted by the accurate and full completion of the data collection instrument.

The data collection instrument was structured into four parts and preceded by a presentation letter explaining the purpose of the research, the confidentiality of the information gathered and the completion of the questionnaire by the main manager. A pre-test of the questionnaire was performed by the business managers and by an expert who studies the industry so that the language use was suitable and to assure the respondents' understanding of the questions.

The first part consists of an adapted question by Henderson (1998), previously used in the studies by Segev (1987), which aims to identify the type of strategic behavior within organizations in accordance with the typology proposed by Miles and Snow (1978). The question requests a choice, among four alternatives, which best describes the organization in comparison with its competitors.

The second part was adapted from the studies by Daft, Sormunen and Parks (1988) and by Beal (2000) and it identifies the environmental scanning and frequency of use of information sources employing a five-point scale, from 1 (low frequency) to 5 (high frequency). The environment was subdivided into 6 sections: competitors, clients, technology, politics/regulations, economy and social and cultural aspects. Information sources were subdivided into external written, internal written, personal external and personal internal.

The third part addressed the companies' performance through subjective measures adapted to the study by Beal (2000) and to the researched industry by means of interviews with the managers who took part in the questionnaire pre-test. In these interviews, the manner in which the indicators were composed was adjusted and the indicators regarded as more representative to measure the industry's performance of the companies. These measures have shown a stronger connection with objective measures and are especially useful when objective data is not available or hard to access, something typical of small companies (Beal, 2000).

A question about the satisfaction and a question about the importance perceived by the managers in relation to the five indicators were made: profitability

rate related to the percentage of net profits over revenues, sales growth rate, client retention success rate, profit growth rate and profit absolute value by the time period considered.

The answers were given based on a five-point scale (1-less important/satisfied to 5 - very important/satisfied) and performance in each indicator was obtained by multiplying its importance score by satisfaction. The company's general performance was obtained by the arithmetic mean of the performance in the five established indicators. Thus, the performance subjective scale varied between 1 and 25, if all company indicators scored at the minimum or maximum values respectively for importance and for satisfaction.

A similiar measure of performance can be found in studies such as the ones by Slater and Narver (1993) and Kumar, Subramanian and Yunger (1997) and nationwide the most similar studies to these are the ones by Perin and Sampaio (1999) and Gulini (2005).

In the fourth and last part, the questionnaire has questions that describe the company's size and age. As for the company´s age, the number of years the company had been operating was used and as for the size of the company, two measures were used: number of employees and the monthly car inventory over the last year.

5. RESULTS

The companies studied were described in accordance with the classification by SEBRAE (2007), which takes the number of employees into account in order to determine company size. Based on this classification, the sample is characterized as being mostly composed of micro-enterprises or small companies for this industry´s companies show less than 49 employees: 38 of them with 5 employees, 13 with between 6 and 16 employees and 10 of them with more than 15, and the small ones with 49 employees. The average number of employees in these companies is 9.98, with a standard deviation of 12.91, as seen in Table 1 below.

Table 1 – Companies' characteristics

Variables	Mean	s.d.
Number of employees	9.98	12.91
Age	8.98	10.90
Average inventory	48.03	52.14
Performance	13.99	5.93

s.d = standard deviation

The average inventory has around 48 cars by company, with a standard deviation of 52.14. As far as the inventory is concerned, it is possible to find 14 companies with up to 20 cars, 27 with an inventory of 20 to 40 cars and 20 companies with an inventory of more than 40 cars.

The number of years the company had been operating was close to nine years, with a standard deviation of 10.90. Twenty eight companies were five years old or younger; 16 of them were between six and 15 years old and 12 companies were over 15 years old. Although the average age shows they are mature, there is a group of younger companies; 33 of them younger than five years old, and they are going through a time period in which they are being absorbed by the market. According to Sebrae (2007), 56% of micro enterprises and small companies in the country do not

reach the age of five (SEBRAE 2007); however most companies in the sample still seek maturity and stability.

Out of the total number in the sample, 38 are non-authorized car/motorcycle dealers, without an exclusive contract with a manufacturer. Among them, the performance results of 30 companies are achieved predominantly from car sales, six of them achieve their performance results from motorcycle sales and two of them achieve them from car and motorcycle sales. On the other hand, twenty three car/motorcycle dealers were found; that is, companies with an exclusive contract with manufacturers. Out of this total, 16 of them achieve their sales results predominantly from cars, five of them predominantly from motorcycles and two of them from car and motorcycle sales.

However, out of the 38 non-authorized dealers, only two of them show more than 10 employees on their payroll, and this number is very different when we compare it with authorized dealers, as 57% of them show more than 10 employees on their payroll. Through this data, it was noticed that the sample is predominantly characterized by car dealers (46), being most of them composed of non-authorized dealers (30), showing that authorized dealers are the most mature in this industry, they are bigger and their years of operations are longer than those of the non-authorized dealers.

5.1 Strategic behavior

The four strategic behavior types defined by Miles and Snow (1978) were found, as described in Table 2 below.

Table 2 – Strategic behavior of the companies in the sample

Strategic Behavior	**N**	**%**
Defender	19	31.15
Prospector	22	36.06
Analyzer	18	29.51
Reactor	02	3.28
Total	61	100.00

It is possible to see that prospectors are the majority, with 36.06%, followed by defenders with 31.15%, then analyzers with 29.51% and, lastly, reactors with 3.28%. Standard deviation for this data is 8.99, which is high due to the low number of companies that follow the reactor strategy. By excluding this strategic type, standard deviation is 2.08, suitable to the analysis herein performed. These results show differences from other analyses performed in Brazil. The one performed by Gulini (2005), the predominant strategy was the defender for Internet providers, followed by analyzer and then prospectors. The one performed by Gimenez et al. (1998), for small companies from different types of industry, the analyzer strategy was the most adopted, followed by the prospector strategy. For Vasconcelos and Cândido (2005), companies in Information and Communication Technologies (ICT) in Capina Grande, State of Paraiba, the defender strategy was the most predominant within the companies.

Analysis of the data above shows that the conclusion reached is that the group of respondents of the companies that describe themselves as reactors remained at a lower percentage, reinforcing the model suggested by Miles and Snow (1978), and that organizations that follow the reactor strategy would survive less in competitive markets.

5.2 Environmental scanning

Regarding the scanning of environmental aspects (Table 3), it is possible to state that companies in the sample analyze economic aspects and their clients more frequently, placing more emphasis on social and cultural aspects. A possible interpretation of these results can be found in the fact that this industry is very much influenced by interest rates in financing or loans , which may lead to a more frequent scanning of economic aspects.

The results of this research, compared with the ones by Daft, Sormunen, Parks (1988) and Cancellier, Alberton and Silva (2007), show correspondence, as the client variable was described with a high frequency of scanning. Results by McGee and Sawyerr (2003), however, are different, as the technological aspect was the most scanned, an analysis that did not coincide with the one in this research. This difference, however, may occur due to the differences in the profile of the samples, for McGee and Sawyerr (2003) analyzed high technology manufacturing companies.

Table 3 – Scanning frequency

Variables	Mean	s.d
Environmental aspects		
Competitors	3.78	1.27
Clients	3.95	0.99
Technological Aspects	3.54	1.35
Regulatory aspects	3.50	1.35
Economic aspects	4.52	0.79
Social and cultural aspects	3.33	1.46
Information sources		
External written	3,88	1,30
Internal written	2,64	1,49
External personal	2,84	1,37
Internal personal	3,98	1,19

s.d – standard deviation

Regarding the use of information sources, it is seen that a higher frequency occurs in internal personal sources, followed by external written ones, than external personal source, with a lower average, and the use of internal written sources. It is possible that managers, due to the fact they frequently scan economic aspects, will finally use more external written sources. On the other hand, it is possible to see that the companies in the sample use internal written sources less frequently, not creating much information from documents and reports, showing that the companies in this industry of the sample show to be little structured in the structuring and filing of information internally.

In order to verify the differences between the types of strategic behaviors regarding characteristics of the organization, an analysis of variance was performed in

order to identify statistically significant differences among means, based on the Fischer's least significant difference (LSD). As just two companies in the sample show the reactor behavior, the option was to exclude them from the analysis, as the reduced size would prevent the detection of significant differences. Thus, the calculations were performed in order to identify different characteristics among the groups composed of prospectors, analyzers and defenders, whose results are shown in Table 4 below.

Table 4 – ANOVA – Strategic behavior and organizational characteristics

Variable	Strategic behavior			p	Comparison among groups		
	Prospector (1)	Analyzer (2)	Defender (3)		1-2	1-3	2-3
Number of employees	16.3	5.2	6.7	**0.01**	**0.01**	**0.01**	0.71
Age	13.9	7.3	5.2	**0.02**	**0.04**	**0.01**	0.52
Average Inventory	57.3	52	31.7	0.24	0.72	0.10	0.22
Performance	14.6	12.2	15.3	0.24	0.21	0.66	0.10
N	22	18	19				

In bold = statistic significance on the Fischer's LSD test

Among organizational characteristics, differences between strategic types regarding size and age were found. Size, measured by the number of employees, proved to be different between prospectors and the other companies analyzed; prospectors are bigger compared with analyzers and compared with defenders at α of 0.01. Regarding age, prospectors proved to be older than other strategic types, almost twice the age of analyzers and a little more than twice and half the age of the defenders. Although they are more mature, it is not possible to identify whether the strategic behavior was adopted due to the growth of the companies or whether the companies that follow the prospector strategy grow more than those that adopt other types of behavior.

Despite the fact that some studies have shown that companies may vary their performance according to their adopted strategic behavior, the results herein obtained do not allow this conclusion to be reached in the researched sample.

Even if the direction of performance shows higher means for the defender behavior, followed by prospectors and by analyzers in this sequence, the differences analyzed were not statistically significant.

Thus, the results do not disprove research, such as the one by Judge Jr and Fowler (1996), which found prospectors and analyzers as having better performance in comparison with reactors, and by Aragon-Sanches and Sanches-Marín (2005), Gulini (2005), Teixeira, Rossetto and Carvalho (2009), Rossetto, Rossetto, Verdinelli and Carvalho (2012) and Gnjidić (2014), which found better performance in small companies that follow the prospector strategy, despite the fact they operate in different industries.

It is important to highlight that the absence of companies that follow the reactor strategy can be attributed to this finding as they are attributed a lower performance.

In order to verify differences between environmental scanning and organizational characteristics, a correlation analysis was performed between scanning frequencies and organizational characteristics related to size, age and performance (Table 5).

Table 5: Correlation between Scanning and Organizational Characteristics

Organizational Variable	**Scanning**	
	Environmental Aspect	Information Sources
Number of Employees	.186 p=.150	**.359** **p=.004****
Age	**.269** **p=,036***	.018 p=.407
Average Inventory	,070 p=.591	.129 p=.320
Performance	.097 p=0.342	**.458** **p=.007****

* p< .05 ** p< .01

Data shows a positively moderate and very significant correlation (p< .01) between the frequency of access to information sources and the size measures by the number of employees, suggesting that bigger companies access information sources more frequently than small ones - a fact that is supported in the study by Franco et al. (2011), in Portuguese companies from different industries. Regarding age, there is a slightly positive and significant correlation with the frequency of scanning of the external environment, suggesting that older companies seek information about the environment they operate in more frequently, a fact that is supported in the study by Mohan-Neil (1995), in companies from different industries.

The performance of the companies in the sample showed a positive association with the scanning of information sources, presenting a moderate to strong and highly significant coefficient (p< .01). This relation proved to be stronger than the one verified concerning strategic behavior and performance, suggesting that the scanning effort may represent a greater influence on performance than the type of strategic behavior adopted.

When the differences between strategic behaviors is observed in the present scanning, (Table 6), it is seen that the general mean of the scanning effort in relation to technological aspects, prospectors keep a higher and statistically significant frequency.

The most significant difference lies in the scanning of the technological environment, with prospectors showing a higher frequency both in relation to analyzers and to defenders. Another significant difference found was the general scanning effort between prospectors and defenders.

Table 6: ANOVA – Environmental scanning and strategic behaviour

Variable	Strategic Behavior			P	Comparison among groups		
	Prospector (1)	Analyzer (2)	Defender (3)		1-2	1-3	2-3
Competitors	4.1	3.5	3.7	0.23	0.09	0.26	0.57
Clients	3.9	3.8	4.1	0.81	0.72	0.75	0.52
Technological Aspects	4.1	3.1	3.2	**0.03**	**0.02**	**0.03**	0.82
Regulatory Aspects	3.7	3	3.7	0.20	0.11	0.94	0.13
Economic Aspects	4.6	4.6	4.3	0.48	0.87	0.32	0.27
Social and Cultural Aspects	3.4	3.1	3.4	0.72	0.45	0.90	0.53
All variables	4.0	3.5	3.7	0.10	**0.04**	0.21	0.740

In bold = statistic significance on the Fischer's LSD test

A complementary analysis shows that, out of the six studied aspects, five of them present the prospector behavior with higher scanning means, and the variable client alone presents a lower mean compared with defenders. Although the differences are not statistically significant in these aspects of the environment, the means contribute to reinforce the fact that the prospectors in the sample scan their environment more frequently.

The use of information sources between strategic behaviors (Table 7) shows differences with higher means achieved by prospectors in four types of sources and, in the general mean, the use of information sources. Regarding the use of internal personal sources alone, the prospector behavior did not achieve the highest mean among the groups. When the results are concentrated in such sources as internal, external, personal, and written form and all the sources, the prospector behavior shows higher mean in all variables.

The obtained results show that prospectors achieved higher means in the frequency of access to information sources in relation to defenders and analyzers. The exception lies in internal personal sources, in which defenders showed a slightly higher means. When the means by type of sources are considered, once again prospectors show higher means in internal, external and written sources and in the mean of all sources, achieving the same score as defenders when it comes to the use of personal sources.

7: ANOVA – Sources of information and strategic behavior

Variable	Strategic Behavior			p	Comparison among groups		
	Prospector (1)	Analyzer (2)	Defender (3)		1-2	1-3	2-3
External written sources	4	3.7	3.8	0.65	0.37	0.81	0.52
Internal written sources	3.3	2	2.5	**0.02**	**0.01**	0.07	0.38
External personal sources	2.9	2.7	2.8	0.86	0.60	0.71	0.89
Internal personal sources	4.1	3.2	4.2	0.11	0.09	0.73	**0.05**
Mean of internal sources	3.7	2.6	3.3	**0.03**	**0.01**	0.29	0.10
Mean of external sources	3.5	3.2	3.3	0.67	0.37	0.70	0.62
Mean of personal sources	3.5	2.9	3.5	0.37	0.20	0.95	0.24
Mean of written sources	3.7	2.8	3.1	0.09	**0.03**	0.20	0.36
Mean of all the sources	3.6	2.9	3.3	0.15	**0.05**	0.44	0.25
N	22	18	19				

Fischer In bold = statistic significance on the Fischer's LSD test

Statistically significant differences among the groups were found in the frequency of use of internal written sources (α=0.02), in the mean of the internal sources (α=0,03) and in the mean of written sources (α=0.09). Prospectors were ahead of analyzers and defenders in the frequency of use of internal written sources and ahead of analyzers in internal personal sources, in the mean of internal sources and in the mean of written sources.. No differences with statistical significance were found regarding the use of external sources, either written or personal, and no differences at α=0.10 were found in the mean of use of external sources and personal sources.

Considering the comparison between pairs of groups alone, without the effect of the interaction between them, it is possible to see differences between prospectors and analyzers at α=0.10 regarding the mean of use of internal personal sources and α=0.05 for the mean of all sources. Therefore, higher differences in means are found in sources with internal and written characteristics and lower differences in means are found in the sources with external and personal characteristics.

The use of internal written sources is usually associated with the presence of information systems and the generation of reports in the organization, something that usually happens in bigger companies. The fact that prospectors present the highest number of employees shows that variables related to size and strategic behavior may interact with one another in order to result in a higher frequency of access to internal sources.

6. CONCLUSION

Environmental scanning, regarded as the activity of acquiring and using information about the organization´s external environment (Choo, 1999), refers to the activity that may play an important role in the process of adjusting the organization and its strategy to the environment. This research aimed to analyze the relation between strategy and scanning in this area. Differences were found between strategic types regarding scanning of the environment and organizational characteristics. By adopting the strategic behavior typology by Miles and Snow (1978), a balanced sample was obtained for three out of their four types of behavior, which enabled the analysis of the differences among the groups within a sample of small companies. This taxonomy's priority of use in the sample analyzed reinforces the argument by Gimenez et. al. (1999), of its application to small companies.

Miles and Snow (1978) state that some differences must be noted in the company's success, according to their strategic behavior: prospectors, analyzers and defenders have similar chances of success, but they have to be better than reactors, a fact that was found by Segev (1987) and Conant, Mokwa and Varadarajan (1990). The evidence herein found, regarding the fact that performance of prospectors, analyzers and defenders are very similar to one another, is partially aligned with this initial proposition, and distant from the evidence analyzed by Slater and Narver (1993) and Aragon-Sánchez and Sánchez-Marin (2005), which shows that prospectors are superior companies in comparison with the other types of behavior.

If they do not show significant differences between types of strategic behavior and scanning of information, the correlations obtained between access to information sources and performance suggest that activities in the management of information impact on the reach of performance of the small companies in the sample. Thus, in this research, scanning of information sources related more to organizational performance than to the strategy measured by the strategic behavior typology. This result highlights the suggestions found in studies on scanning and information management in the context of small companies.

Another highlight in the results is found in the differences of information scanning between companies, according to their strategic behavior. If, in relation to clients, the effort seems to be very similar between strategic types, the mean of frequency of information scanning in prospectors is higher in the other five aspects analyzed in the environment, with statistically significant differences in technological aspects and in relation to competitors. Overall, prospectors reported higher frequency both in the scanning of their external environment and in their access of information sources. Such findings show that the relation with the environmental changes according to the type of strategic behavior and some environmental areas can be more significant than others for the alignment with behavior.

Regarding information sources, in the external sources alone the effort seems to be very similar, and prospectors show a higher mean of frequency in the other three types of analyzed sources, with statistically significant differences to internal sources and written sources.

Due to the fact that the results refer to a limited set of small companies – car and motorcycle dealers of a city in the State of Santa Catarina – they suggest that new research be done in other industrial contexts so this relation is further understood.

Another research that may be suggested from the results obtained is the analysis of strategic behavior, growth and maturing of small companies. . Entrepreneurs usually have growth as their goal and the death rate of these companies is high in the first years; therefore, the further analysis of the relation between strategic behavior, size and age of a company may help to understand the reality of this important organizational classification,

A desirable element in further research is going beyond the frequency of information scanning, herein addressed, and including the analysis and use of the information obtained. A small company that uses sales support information may achieve maximum performance depending on how it uses this type of information to sell more, and not only because it accesses it more frequently.

REFERENCES

Aguilar, F. (1967). **Scanning the Business Environment.** New York: MacMillan.

Ansoff, I. (1977). **Estratégia Empresarial**. São Paulo: Atlas.

Analoui, F.; Karami, A. (2002). How chief executives' perception of the environment impacts on company performance. **The Journal of Management Development**, v. 21, n. 4, p. 290-305.

Aragón-Sanches, A.; Sánches-Marín, G. (2005). Strategic Orientation, Management Characteristics, and Performance: A Study of Spanish SMEs. **Journal of Small Business Management**; v. 43, n. 3. pp. 287-308.

Beal, R. (2000). Competing Effectively: Environmental Scanning, Competitive Strategy, and Organizational Performance in Small Manufacturing Firms. **Journal of Small Business Management**. v. 38, n. 1.

Bourgeois, L. J.III. (1980). Strategy and environment: a conceptual integration, **Academy of Management Review**, v. 5, n. 1, p. 25-39.

Cancellier, E.L. P. de L; Alberton, A; Silva, A. B. (2007). Diferenças na Atividade de Monitoramento de Informações do Ambiente Externo em Pequenas e Médias Empresas: a Influência do Porte e da Idade. **ENANPAD - 2007.**

Choo, C. W. (1999). The art of scanning the environment. **Bulletin of the American Society for Information Science**, v. 25, n. 3, p. 21-24, Feb./Mar.

Conant, J.; Mokwa, M.P.; Varadarajan, R. (1990). Strategic Types, Distinctive Marketing Competencies and Organizational Performance: A Multiple Measures-Based Study. **Strategic Management Journal.** v. 11, n.5, p. 365-383.

Daft, R. L.; Sormunen, J.; Parks, D. (1988). Chief Executive Scanning, environmental characteristics and company performance: an empirical study. **Strategic Management Journal,** v. 9, n. 2, p. 23-140.

Davenport, T. H. (1998). **Ecologia da Informação**. São Paulo: Futura.

Franco, M; Haase, H; Magrinho, A.; Silva, J. R. (2011). Scanning practices and information sources: an empirical study of firm size. **Journal of Information Enterprise Management**, v. 24, n. 3, p. 268-287.

Gimenez, F. A. P. (1998). Escolhas estratégicas e estilo cognitivo: um estudo de caso com pequenas empresas. **Revista de Administração Contemporânea**, v. 2, n. 1, p. 27-45, jan./abr.

Gimenez, F.A. P. et al. (1999). Estratégia em Pequenas Empresas: uma Aplicação do Modelo de Miles e Snow. **RAC**, v. 3, n. 2, Mai/Ago. p. 53-74.

Gnjidić, V. (2014). Researching the dynamics of Miles and Snow's strategic typology. **Management**, v. 19, n. 1, pp. 93-117.

Gulini, P. L. (2005). Ambiente organizacional, comportamento estratégico e desempenho empresarial: um estudo no setor de provedores de internet de Santa Catarina. **Dissertação de Mestrado da Universidade do Vale do Itajaí**. Biguaçu.

Haase, H.; Franco, M., (2011). Information sources for environmental scanning: do industry and firm size matter? **Management Decision**, v. 49, n. 10, p. 1642-1657.

Hagen, A. F.; Amin, S. G. (1995). Corporate executive and environmental scanning activities: an empirical investigation. **San advanced management journal**.

Hagen, A. F.; Haile, S.; Maghrabi, A. (2003). The impact of the type of strategy on environmental scanning activities in the banking industry: an international perspective. **International Journal of Commerce & Management**, vol. 13, n. 2, p. 122-143.

Hambrick, D. C. (1983). High profit strategies in mature capital goods industries: a contingency approach. **Academy of Management Journal**, v. 24, n. 4.

Henderson, B. D. (1998). **As Origens da Estratégia**. In MONTGOMERY, Cynthia A. Estratégia: a busca da vantagem competitiva. 2.ed. Rio de Janeiro: Campus, p. 3-11.

Judge, JR. W. Q.; Fowler, D. M. (1996). Organizational Responses to Strategic Issues Posed by the Natural Environment: An Application of Miles and Snow's Strategic Types. **Industrial & Environmental Crisis Quaterly**. v. 9, n. 4.

Lang, J. R.; Calatone, R. J.; Gudmundson, D. (1997). Small firm information seeking as a response to environmental threats and opportunities. **Journal of Small Business Management**, v. 35, n. 1, p. 11-23.

Malhotra, N. K. (2001). **Pesquisa de marketing**: uma orientação aplicada. Porto Alegre: Bookman.

May. R. C.; Stewart, JR. W. H.; Sweo, R. (2000). Environmental Scanning Behavior In a Transitional Economy: Evidence from Russia. **Academy of Management Journal**, v. 43, n. 3, p. 403-427.

Mcgee, J. E.; Prusak, L. (1994). **Gerenciamento estratégico da informação**. Rio de Janeiro: Campus.

Mcgee, J. E.; Sawyerr O. O. (2003). Uncertainty and information Search Activities: A study of Owner-Managers of Small High-Technology Manufacturing Firms. **Journal of Small Business Management,** p. 385-401.

Miles, R. E.; Snow, C. C. (1978). **Organizational strategy, structure and process**. New York : McGraw-Hill.

Mintzberg, H. (1988). Generic strategies: toward a comprehensive framework. In: **Advances in Strategic Management**, Greenwich, v. 5. p. 1-67.

Mohan-Neil, S. I. (1995). The influence of firm's age and size on its environmental scanning activities. **Journal of Small Business Management**, v. 33, n. 4, p. 10-21.

Ohmae, K. (1991). **Mundo sem fronteiras**: poder e estratégia em uma economia global. São Paulo: Makron Books.

Perin, M. G. Sampaio, C. H. (1999). Performance Empresarial: uma comparação entre indicadores subjetivos e objetivos. IN: Encontro Anual da ANPAD, 23., 1999, Foz do

Iguaçu. **Anais eletrônicos...** Foz do Iguaçu: ANPAD, 1999. Disponível em http://www.anpad.org.br/. Acesso em: 20 agosto de 2008.

Porter, M. E. (1986). **Estratégia Competitiva**: Técnicas para Análise de Indústrias e da Concorrência. Rio de Janeiro: Campus.

Rossetto, C. R. (1998). Adaptação estratégica organizacional: Um estudo multi-caso na indústria da construção civil - setor de edificações. **Doutorado em Engenharia de Produção** - Universidade Federal de Santa Catarina, UFSC, Brasil.

Rossetto, C. R. ; Rossetto, A. M. ; Verdinelli, M. A. ; Carvalho, C. E. (2012). Novas evidências na relação ambiente organizacional, comportamento estratégico e desempenho: um estudo multi-caso em agências de viagens da grande Florianópolis (SC). **Revista Turismo & Desenvolvimento (Online),** v. 2, p. 717-728.

Sebrae. (2007). **Estudos da Pequena Empresa**. Disponível em www.sebrae.com.br. Acesso em: 28 dez. 2007.

Segev, E. (1987). **Strategy, strategy making and performance in a business game.** Strategic Management Journal, vol. 8, n. 6, p. 565-577.

Slater, S; Narver, J. (1993). Product-market strategy and performance: an analysis of the Miles & Snow Strategy Types. **European journal of marketing**, v.27, n10, p. 33-51.

Stewart JR., W. H.; May, R. C.; Kalia, A. (2008). Environmental perceptions and scanning in the United States and India: convergence in entrepreneurial information seeking? **Entrepreneurship: theory and practice**, vol. 32, n. 1, p. 83-106.

Sund, K. J. (2013). Scanning, perceived uncertainty, and the interpretation of trends: a study of hotel director`s interpretation of demographic change. **International Journal of Hospitality Management**, vol. 33, p. 294-303.

Teixeira, O. R. de P.; Rossetto, C. R. ; Carvalho, C. E. (2009). A Relação entre o Ambiente Organizacional e o Comportamento Estratégico no Setor Hoteleiro de Florianópolis Sc. **Turismo. Visão e Ação (Itajaí),** v. 11, p. 157-174,

Vasconcelos, A. F. de; Cândido, G. A. (2005). **Estratégia em Pequenas e Médias Empresas: uma aplicação dos Modelos de Miles e Snow e Kirton em um Arranjo Produtivo Local.** XXV Encontro Nac. de Eng. de Produção – Porto Alegre, RS, Brasil, 29 out a 01 de nov de 2005. p.3289 a 3295. Disponível em: http://www.abepro.org.br/biblioteca/ENEGEP2005_Enegep0702_0487.pdf. Acesso em 18 jan. 2008.

Zubaedah, Y.; Fontana, A.; Afiff, A.Z. **(**2013). Revisiting the Miles and Snow Typology Strategic Path Mediating Business Strategy and Resource Configuration for Innovation. **The South East Asian Journal of management.** April, v.7, n, 1.

Yasai-Ardekani, M., Nystrom, P. C. (1996). Designs for environmental scanning systems: tests of a contingency theory. **Management Science**, vol. 42, n. 2, p. 187-204.

Yunggar, M. (2005). Environmental scanning for strategic information: content analysis from Malaysia. **The Journal of American Academy of Business,** v. 6, n. 2, p. 324-331.